

Amendments to the Specification:

Please add the following new section on page 1, prior to the heading "BACKGROUND OF THE INVENTION":

CROSS-REFERENCE TO RELATED APPLICATION(S)

This application is a continuation application of U.S. Patent Application Serial No. 09/671,624, filed September 28, 2000, entitled SYSTEM FOR COUPLING A TOOTHED STARTER RING TO A SUPPORT CONNECTED TO THE OUTPUT SHAFT OF AN INTERNAL COMBUSTION ENGINE, By Eric Jacquemont et al.

Please replace the paragraph beginning at page 6, line 22, with the following amended paragraph:

- the peripheral part 3, 3a of the flywheel 1, 1a, 1b, 1c, 1d adapted to receive the ring 2, 2a, 2b, 2c has a shape in radial section in any radial plane corresponding substantially to an inside angle that is substantially a right angle, with a substantially cylindrical peripheral surface 10 for fixing the ring 2, 2a, 2b, 2c to the flywheel 1, 1a, 1b, 1c, 1d and a radial surface 11 of contact between the ring 2, 2a, 2b, 2c and the flywheel 1, 1a, 1b, 1c;

Please replace the paragraph beginning at line 29 of page 6 with the following amended paragraph:

- the inside peripheral part 12 of the ring 2, 2a, 2b, 2c adapted to be fixed to the flywheel 1, 1a, 1b, 1c, 1d has a shape in radial section complementary to the shape of the peripheral part 3, 3a of the flywheel 1, 1a, 1b, 1c, 1d, corresponding substantially to an outside angle that is substantially a right angle, with a substantially cylindrical inside peripheral surface 13, 13a, 13b, 13c, 13d complementary to the peripheral surface 10 and adapted to be fixed over at least a part of its extent to the peripheral surface 10 of the

flywheel 1, 1a, 1b, 1c, and a radial surface 14 complementary to the radial surface 11 and adapted to be at least partly in contact with the radial surface 11 of the flywheel 1, 1a, 1b, 1c;

Please replace the paragraph beginning at line 6 of page 7 with the following amended paragraph:

- the complementary peripheral surface 13, 13a, 13b, 13c, 13d of the ring 2, 2a, 2b, 2c is fixed over at least a part of its extent to the peripheral surface 10 of the flywheel 1, 1a, 1b, 1c, at least in the region of the complementary peripheral surface 13, 13a, 13b, 13c, 13d at the greatest distance from the radial surface 14 of the ring 2, 2a, 2b, 2c, in such a manner that the ring 2, 2a, 2b, 2c can deform slightly in the radial direction toward the shaft 4 when starting the engine and the complementary radial surface 14 of the ring 2, 2a, 2b, 2c can slide slightly along the radial surface 11 of the flywheel 1, 1a, 1b, 1c.

Please replace the paragraph beginning at line 16 of page 7 with the following amended paragraph:

In the embodiment shown in Figures 2A, 2B and 2C, the ring 2, 2a has an annular part 15 extending axially beyond the teeth 8 in the axial direction 16 away from the complementary radial surface 14 and toward the rotor 7 and the ring 2, 2a is fixed to the flywheel 1 at the axial end 17 of the annular part 15.

Please replace the paragraph beginning at line 34 of page 7 with the following amended paragraph:

Outside the regions in which the ring 2, 2a is fixed to the flywheel 1, the remainder of the complementary substantially cylindrical surface 13, 13a is shaped so that it is radially

spaced from the cylindrical surface 10 of the flywheel 1 to impart the required radial flexibility to the ring 2, 2a.

Please replace the paragraph beginning at line 5 of page 8 with the following amended paragraph:

In the embodiment shown in Figures 2A to 2C the region 14a of the complementary radial surface 14 of the ring 2, 2a adapted to be in contact with the radial surface 11 of the flywheel 1 extends radially a short distance from the circular edge 20 constituting the corresponding corner of the axial section of the ring as shown in the figures, i.e. the bottom right-hand corner.

Please replace the paragraph beginning at line 12 of page 8 with the following amended paragraph:

Correspondingly, the region 11a of the radial surface 11 of the flywheel 1 adapted to be in contact with the region 14a of the ring extends radially a short distance from the peripheral surface 10 so that it comes into sliding contact with the region 14a of the complementary radial surface 14 of the ring 2, 2a which has a small radial dimension. The radial surface 11 is therefore extended by a widely flared conical surface 21 which has the same axis 5. This facilitates fitting the ring 2, 2a to the flywheel 1.

Please replace the paragraph beginning at line 29 of page 8 with the following amended paragraph:

In the embodiment shown in Figures 3A and 3B, the complementary inside peripheral surface 13b of the ring 2, 2b has an axial dimension that preferably corresponds substantially to that of the teeth 8. The ring 2, 2b is fixed, for example welded or shrink-fitted, to the flywheel 1a in the region 23 of

the complementary peripheral surface 13b at the greatest distance from the complementary radial surface 14. The ring 2b further includes an annular groove 24 starting from the surface 25 delimiting the ring 2b in the axial direction 16 toward the rotor 7, away from the complementary radial surface 14, and extending axially toward the complementary radial surface 14 over a part of the axial dimension of the ring 2b.

Please replace the paragraph beginning at line 8 of page 9 with the following amended paragraph:

The region 23 shown in Figure 3A has an axial dimension sufficient to enable the ring 2b to be shrink-fitted to the surface 10 of the flywheel 1a.

Please replace the paragraph beginning at line 11 of page 9 with the following amended paragraph:

In the Figure 3B example, the ring 2b is fixed to the flywheel 1a by a weld 19 at the axial end of the region 23 opposite the complementary radial surface 14.

Please replace the paragraph beginning at line 14 of page 9 with the following amended paragraph:

In the embodiment shown in Figures 3A and 3B, the contact region 11a of the radial surface 11 of the flywheel 1a is radially outside the peripheral surface 10, and extends a short distance in the radial direction. It carries a thin elastomer or plastomer coating 22 enabling sliding contact with the region 14a of the complementary radial surface 14 of the ring 2b.

Please replace the paragraph beginning at line 21 of page 9 with the following amended paragraph:

In this embodiment the flywheel 1a does not extend radially outward beyond the region 11a, and the ring is therefore entirely free to deform when starting the engine.

Please amend the paragraph beginning at line 25 of page 9 with the following amended paragraph:

In the embodiment shown diagrammatically in Figure 4 the flywheel includes an intermediate annular metal member 26 to which the ring 2c is fixed in any conventional way, for example screwed, shrink-fitted or welded.

Please amend the paragraph beginning at line 30 of page 9 with the following amended paragraph:

The intermediate annular member 26 includes the complementary inside peripheral surface 13c and the complementary radial surface 14. The intermediate annular member 26 is fixed to the flywheel 1b at its axial end at a distance from the complementary radial surface 14 as if the intermediate member 26 were an integral part of the ring 2c. It is fixed to the flywheel 1b in any manner known in the art.

Please replace the paragraph beginning at line 3 of page 10 with the following amended paragraph:

In the embodiment shown, the intermediate member 26 has a greater length in the axial direction than the ring 2c. It is fixed to the flywheel 1b by a weld 19 at its axial end 17 at a distance from the complementary radial surface 14.

Please replace the paragraph beginning at line 8 of page 10 with the following amended paragraph:

In the embodiment shown diagrammatically in Figure 5 the flywheel 1c includes an annular ring 27 of a deformable

material, for example an elastomer or plastomer, extending axially along the complementary peripheral surface 13d of the ring 2c. The ring 27 is glued or stuck by any means known in the art to the peripheral surface 10 of the flywheel 1c on one side and to the peripheral surface 13d of the ring 2c on the other side.

Please add the following new paragraph on page 10, after line 7:

Thus, as seen in figures 3A, 3B and 4, the substantially cylindrical peripheral surfaces 10, 13 of the ring 2b, 2c and the support 1a, 1b, respectively, are connected to each other by a metal-to-metal fixation, i.e., a shrink fit, a weld or an intermediate annular metal member, respectively.

Please amend the paragraph beginning at line 17 of page 10 with the following amended paragraph:

The annular ring 27 necessarily has sufficient thickness to impart to the ring 2c sufficient freedom of deformation relative to the flywheel 1c to obtain the effects sought by the present invention.

Please amend the paragraph beginning at line 21 of page 10 with the following amended paragraph:

Furthermore, an elastomer or plastomer coating 22 is fixed to the radial surface 11, for example, to enable sliding contact with the complementary radial surface 14 of the ring 2c.

Please amend the paragraph beginning at line 25 of page 10 with the following amended paragraph:

In the embodiment shown in Figure 6, the annular ring 27a has an L-shaped radial section and includes a radial wall 32 stuck to the radial surface 11 of the support 1c on one side and

to the complementary radial surface 14 of the ring 2c on the other side.

Please amend the paragraph beginning at line 30 of page 10 with the following amended paragraph:

The ring 27a can therefore be easily made by pressurized injection of the elastomer into the L-shaped space between the support 1c and the ring 2c.

Please amend the paragraph beginning at line 33 of page 10 with the following amended paragraph:

In the embodiment shown in Figure 7 the peripheral part 3a of the flywheel 1c comprises only the cylindrical surface 10, with no radial wall.

Please amend the paragraph beginning at line 1 of page 11 with the following amended paragraph:

The conventional radial wall 11 serves both to locate the ring 2c accurately on the flywheel 1c during fabrication of the flywheel and to absorb some of the axial force transmitted by the rotor 7 of the starter motor to the ring 2c when starting the engine. This is known in the art.

Please amend the paragraph beginning at line 7 of page 11 with the following amended paragraph:

In the absence of the conventional wall 11, the ring 2c must be fixed to the support by means adapted to absorb all of the axial force.

Please amend the paragraph beginning at line 10 of page 11 with the following amended paragraph:

In the embodiment shown in Figure 7 a visco-elastic material annular ring 27b is stuck to the peripheral surface 10 of the flywheel 1d on one side and to the peripheral surface 13d of the ring 2d on the other side.

Please amend the paragraph beginning at line 14 of page 11 with the following amended paragraph:

In this embodiment, the ring 2d includes the annular groove 24 described above.

Please amend the paragraph beginning at line 16 of page 11 with the following amended paragraph:

The annular ring 27 can also be made of metal in the embodiment described below with reference to Figure 8.

Please amend the paragraph beginning at line 9 of page 12 with the following amended paragraph:

In the embodiment shown in Figure 8 the peripheral surface of the flywheel 1d has a recess 31 level with each of the two sectors 29 corresponding to the two compression areas and/or with each of the two sectors 30 corresponding to the two expansion areas.

Please amend the paragraph beginning at line 24 of page 12 with the following amended paragraph:

Thus various systems for coupling a ring 2, 2a, 2b, 2c, 2d to a flywheel 1, 1a, 1b, 1c, 1d have been described. Some of these coupling systems include fixing means as far as possible from the complementary radial surface 14 of the ring, imparting to the ring 2, 2a, 2b, 2c, 2d a radial flexibility relative to the flywheel 1, 1a, 1b, 1c, 1d which is facilitated by sliding

contacts over a generally small radial distance between the complementary radial surface 14 of the ring 2, 2a, 2b, 2c, 2d and the radial surface 11 of the flywheel 1, 1a, 1b, 1c, 1d.

Please amend the paragraph beginning at line 8 of page 13 with the following amended paragraph:

In all of the foregoing description, the coupling system according to the present invention connects the ring to the flywheel or its support, that coupling concerning at least partly the outside peripheral surface 10 of the flywheel 1, 1a, 1b, 1c, 1d and the inside peripheral surface 13, 13a, 13b, 13c, 13d of the ring 2, 2a, 2b, 2c, 2d.

Please amend the paragraph beginning at line 14 of page 13 with the following amended paragraph:

The examples described above show that the term "partly" must be interpreted geometrically and means that the coupling surface extends along a part or over a part at least of the peripheral surfaces 10 and 13, 13a, 13b, 13c, 13d, in the peripheral direction as well as in the axial direction.

Please amend the paragraph beginning at line 19 of page 13 with the following amended paragraph:

The coupling systems and the systems for damping the mechanical stresses to which the teeth 8 of the toothed ring 2, 2a, 2b, 2c, 2d are subjected described above effectively achieve the stated objective of 200 000 to 300 000 engine starts, and where necessary many more.

Please amend the paragraph beginning at line 10 of page 15 with the following amended paragraph:

Instead of having a peripheral surface 10 of the support 1 and a peripheral surface 13 of the ring separated over a part of the surface 10, there could be a cylindrical peripheral surface 13 on the ring 2 and a peripheral surface 10 on the support 1 conformed to be radially separated from the surface 13 over a part of its extent.